WHAT IS CLAIMED IS

1. A supersensitive nuclear magnetic resonance imaging apparatus comprising a superconducting magnet, a gradient magnetic field coil, a high frequency emitting coil, and a receiving coil, wherein a biosample, including at least one of cells, organic tissues, and laboratory small animals, is inserted in a sample chamber of generally 1 to 30 mm in diameter, the superconducting magnet is formed of laterally divided split magnets, the direction of the magnetic field generated by said magnet is generally horizontal, the receiving coil is in the form of a solenoid coil, the biosample is inserted from a direction orthogonal to the direction of the magnetic field in a generally vertical direction, and the spatial resolution in imaging of the biosample is not more than one-tenth of a cell that forms the biosample.

2. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 1, wherein a stationary magnetic field generated by the superconducting magnet is not less than 11 T, and more preferably, not less than 14.1 T, variations per hour in Proton nuclear magnetic resonance frequencies due to variations in stationary magnetic field is not more than 1.0 Hz, and the uniformity of the stationary magnetic field in the sample space is not more than 1.0 Hz in Proton nuclear magnetic resonance frequencies.

3. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 1, wherein the imaging spatial resolution is not more than 1 micron.

4. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 1, wherein the receiving coil is formed of oxide high temperature superconducting material, or of magnesium diboride, and the coil temperatures are between 5 K and 40 K inclusive.

5. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 2, wherein imaging spatial resolution is not more than 1 micron.

6. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 2, transmission of protein information network information in the organic tissues can be imaged as two-dimensional or three-dimensional image information.

7. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 2, wherein the receiving coil is formed of oxide high temperature superconducting material, or of magnesium diboride, and the coil temperatures are between 5 K and 40 K inclusive.

8. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 3, wherein the receiving coil is formed of oxide high temperature superconducting material, or of magnesium diboride, and the coil temperatures are between 5 K and 40 K inclusive.

9. A supersensitive nuclear magnetic resonance imaging apparatus comprising a superconducting magnet, a gradient magnetic field coil, a high frequency emitting coil, and a receiving coil, wherein a protein sample dissolved

into water or the like is inserted into a sample tube, the superconducting magnet is formed of laterally divided split magnets, the direction of the magnetic field generated by said magnet is generally horizontal, the receiving coil is in the form of a solenoid coil, the sample is inserted from a direction orthogonal to the direction of the magnetic field in a generally vertical direction, a high-quality protein crystal can be grown in the magnetic field, the spatial resolution being sufficient for observing the surface property of the protein crystal when the protein dissolved in the liquid is crystallized, the growing velocity and growing surface of the crystal can be observed on site by the nuclear magnetic resonance imaging, and the crystal growth conditions can be adequately controlled by obtained information.

10. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 9, wherein a stationary magnetic field generated by the superconducting magnet is not less than 11 T, and more preferably, not less than 14.1 T, variations per hour in Proton nuclear magnetic resonance frequencies due to variations in stationary magnetic field is not more than 1.0 Hz, and the uniformity of the stationary magnetic field in the sample space is not more than 1.0 Hz in Proton nuclear magnetic resonance frequencies.

11. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 9, wherein the imaging spatial resolution is not more than 1 micron.

12. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 9, wherein transmission of protein information network

information in the organic tissues can be imaged as two-dimensional or three-dimensional image information.

13. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 9, wherein the receiving coil is formed of oxide high temperature superconducting material, or of magnesium diboride, and the coil temperatures are between 5 K and 40 K inclusive.

14. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 10, wherein imaging spatial resolution is not more than 1 micron.

15. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 10, transmission of protein information network information in the organic tissues can be imaged as two-dimensional or three-dimensional image information.

16. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 10, wherein the receiving coil is formed of oxide high temperature superconducting material, or of magnesium diboride, and the coil temperatures are between 5 K and 40 K inclusive.

17. A supersensitive nuclear magnetic resonance imaging apparatus according to Claim 11, wherein the receiving coil is formed of oxide high temperature superconducting material, or of magnesium diboride, and the coil temperatures are between 5 K and 40 K inclusive.